OPTICAL RECORDING MEDIUM, METHOD RECORDING OPTICAL RECORDING MEDIUM, AND RECORDER

Claims of corresponding document: EP 1575035 (A1)

1. An optical recording medium comprising: a plurality of recording layers on which information can be recorded by irradiating a laser beam from one side thereof; and each of said recording layers including a power calibration area to optimize intensity of the laser beam.

2. The optical recording medium according to claim 1, wherein said power calibration area is set at the inner peripheral side and/or outer peripheral side of an information recording area of said recording layer.

3. An optical recording medium comprising: an optical-transmissible first substrate; a first recording layer disposed on said first substrate, on which information can be recorded by irradiating a laser beam from the first substrate's side; a second recording layer disposed on said first recording layer, on which information can be recorded by irradiating said laser beam; and each of said first recording layer and said second recording layer including power calibration areas to optimizing intensity of said laser beam.

4. The optical recording medium according to claim 3, wherein said power calibration areas of said first recording layer and said second recording layer are set at the inner peripheral side and/or the outer peripheral side of information recording areas of said first recording layer and said second recording layer.

5. The optical recording medium according to claim 4, wherein said power calibration areas of said first recording layer and said second recording layer are set at the inner peripheral side of said information recording areas of said first recording layer and said second recording layer; and recording of information on said first recording layer and said second recording layer is performed from the inner peripheral side toward the outer peripheral side of said information recording areas.

6. The optical recording medium according to claim 4, wherein said power calibration area of said first recording layer is set at either one side of said inner peripheral side and said outer peripheral side of said information recording area; said power calibration area of said second recording layer is set at the other side of said information recording area; and recording of information on said first recording layer and recording of information in said second recording layer are performed forward opposite directions.

7. The optical recording medium according to any one of claims 3 through 6, wherein said power calibration area of said second recording layer has an area not overlapped on said power calibration area of said first recording layer.

8. The optical recording medium according to any one of claims 3 through 7, wherein a part of said first recording layer overlapping on said power calibration area of said second recording layer is in a previously-recorded state.

9. The optical recording medium according to any one of claims 3 through 8, wherein recording of information on said first recording layer is performed before recording of information on said second recording layer.

10. The optical recording medium according to any one of claims 1 through 9, wherein a recommended recording power value for each of said recording layers is beforehand recorded.

11. A recording method for an optical recording medium having a plurality of recording layers comprising: an OPC recording power setting step of performing an optimum power control (hereinafter referred to as an OPC) before recording on each of said recording layers to set an OPC recording power for each of said recording layers.

12. The recording method for an optical recording medium according to claim 11 further comprising: an

initial recording power setting step of correcting an OPC recording power for another recording layer set at said OPC recording power setting step based on a change in actual recording power relative to an OPC recording power for one recording layer set at said OPC recording power setting step to set a recording power to be used at the time of start of recording on another recording layer.

13. The recording method for an optical recording medium according to claim 12, wherein recording on said one recording layer and recording on said another recording layer are continuously performed.

14. The recording method for an optical recording medium according to claim 12 or 13, wherein said OPC recording power setting step is beforehand performed on all of said recording layers before recording on said optical recording medium; and After recording on said one recording layer said initial recording power setting step is performed before recording on said another recording layer.

15. A recording apparatus for an optical recording medium having a plurality of recording layers comprising: a control arithmetic unit for performing an optimum power control (hereinafter referred to as an OPC) before recording on each of said plural recording layers to set an OPC recording power for each of said recording layers.

16. The recording apparatus for an optical recording medium according to claim 15, wherein said control arithmetic unit corrects an OPC recording power for another recording layer based on a change in actual recording power for an OPC recording power for one recording layer to set a recording power at the time of start of recording on another recording layer.

17. The recording apparatus for an optical recording medium according to claim 16, wherein said control arithmetic unit continuously performs recording on said one recording layer and recording on said another recording layer.

18. The recording apparatus for an optical recording medium according to claim 16 or 17, wherein said control arithmetic unit beforehand sets an OPC recording power for each of all said recording layers before recording in said optical recording medium, and sets a recording power to be used at the time of start of recording on said another recording layer before recording on said another recording layer, after recording on said one recording layer.